

**IMPLEMENTING AGREEMENT
BETWEEN THE UNITED STATES
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND THE
RUSSIAN AVIATION AND SPACE AGENCY
ON THE FLIGHT OF THE RUSSIAN
HIGH ENERGY NEUTRON DETECTOR (HEND)
ON THE UNITED STATES 2001 MARS ODYSSEY ORBITER MISSION**

PREAMBLE

The United States National Aeronautics and Space Administration (hereinafter referred to as "NASA") and the Russian Aviation and Space Agency (hereinafter referred to as "Rosaviakosmos"), hereinafter referred to as the "Parties,"

Recognizing that the flight of the U.S. 2001 Mars Odyssey Orbiter Mission carrying the Russian High Energy Neutron Detector (hereinafter referred to as "HEND") instrument aboard the Mars Orbiter will enhance the scientific return to the international science community in the area of Mars exploration and Mars atmospheric knowledge,

Noting that the U.S. 2001 Mars Odyssey shall expand our understanding of our neighboring planet by providing data on its resources, climate, and evidence of past or present life on Mars,

Having decided to cooperate in the U.S. 2001 Mars Odyssey Orbiter Mission,

Have agreed as follows:

ARTICLE I: DESCRIPTION OF COOPERATION

1. The cooperation set forth in this Implementing Agreement shall be undertaken in accordance with the Agreement Between the United States of America and the Russian Federation Concerning Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes, of June 17, 1992, as extended in 1997, (hereinafter referred to as the "1992 Agreement"). This cooperation shall serve as a continuation of the joint activities associated

with the study of Mars, carried out by Rosaviakosmos in association with the Space Research Institute (hereinafter referred to as "IKI") and NASA within the framework of the U.S.-Russia Space Science Executive Joint Working Group.

2. In accordance with this Implementing Agreement, the science objectives of the Russian HEND instrument are to:

- A. Provide complementary measurement verification with that provided by the thermal epi-thermal neutron detector included in the U.S. Gamma Ray Spectrometer (GRS) facility;
- B. Allow more complete determination of the Mars neutron leakage spectrum;
- C. Provide data for cross-calibration between the two detector systems in the epi-thermal region; and
- D. Utilize neutron leakage spectrum measurements to map hydrogen, and to more accurately determine surface composition.

ARTICLE II: RESPONSIBILITIES

1. In accordance with this Implementing Agreement, NASA shall use reasonable efforts to carry out the following:

- A. Provide a flight opportunity on the 2001 Mars Odyssey Orbiter for the HEND instrument;
- B. Provide for the integration of the Russian HEND into the U.S. Gamma Ray Spectrometer (GRS) facility;
- C. Provide a simulator of GRS electronics for use in Russia during the development stage of the HEND instrument;
- D. Provide for collection and transmission of all of the mission scientific data from HEND and the GRS. Such data are to be used in the same manner as prescribed for all GRS team members; and
- E. Ensure the commanding support of HEND during the flight in accordance with the program of the mission.

2. In accordance with this Implementing Agreement, Rosaviakosmos shall use reasonable efforts to carry out the following:

A. Deliver the HEND instrument in a timely manner to the Jet Propulsion Laboratory in Pasadena, California, or the University of Arizona Lunar and Planetary Laboratory in Tucson, Arizona, or to another NASA-designated contractor facility for integration and testing related to the GRS facility and/or the spacecraft. The list of deliverables includes:

- (i) Simulator of HEND electronics;
- (ii) Engineering unit of HEND;
- (iii) Flight unit of HEND; and
- (iv) Spare flight unit of HEND.

This includes all test data and certifications that the HEND hardware meets the requirements and specifications identified in the 2001 Mars Odyssey Project Requirements, the GRS/Spacecraft Interface Control Document, GRS/HEND interface agreements, and the standard requirements of Rosaviakosmos for space scientific instrumentation;

- B. Provide qualified personnel to support commanding and verification of HEND ground tests at the Jet Propulsion Laboratory in Pasadena, California, or at the Lunar and Planetary Laboratory in Tucson, Arizona, or in another NASA-designated contractor facility;
- C. Provide the necessary operational support for commanding and data processing of HEND during the performance tests and verification and during the flight;
- D. Provide scientific analysis of the data provided by NASA from the HEND instrument and publish the results of these scientific investigations;
- E. Provide the calibration data from HEND for cross-calibration with the U.S. Neutron Spectrometer in epi-thermal energy region; and
- F. Provide to NASA reduced mission flight data from HEND within (6) six months of receipt of the raw data from NASA.

ARTICLE III: FUNDING

The Parties will each bear the costs of discharging their respective responsibilities, including travel and subsistence of personnel and transportation of all equipment and other items for which it is responsible. The obligations of the Parties are subject to the availability of appropriated funds. Should either party encounter budgetary problems which may affect the activities to be carried out under this Implementing Agreement, the Party encountering the problems will notify and consult with the other Party as soon as possible.

ARTICLE IV: ORBIT, LAUNCH SCHEDULE, AND REGISTRATION

The U.S. 2001 Mars Odyssey Orbiter is planned for launch on the U.S. Delta II rocket from the NASA Kennedy Space Center. The launch is currently scheduled for April 2001. The United States shall register the U.S. Mars Odyssey Orbiter spacecraft as a space object in accordance with the 1975 Convention on Registration of Objects Launched into Outer Space.

ARTICLE V: OWNERSHIP OF HARDWARE

The hardware and instrumentation owned and provided by each of the Parties shall be used exclusively for purposes of carrying out this Implementing Agreement. All hardware and associated equipment owned and provided by the Parties under this Implementing Agreement shall remain the property of the respective Party.

ARTICLE VI: IMPLEMENTATION

1. The Parties shall carry out joint activities under the Implementing Agreement within the framework of the U.S.-Russia Space Science Executive Joint Working Group. For the purposes of timely delivery, assembly, and successful operation of the Russian HEND instrument aboard the U.S. 2001 Mars Odyssey Orbiter spacecraft, the Rosaviakosmos (and IKI) researchers shall carry out their technical activities in direct cooperation with NASA's Jet Propulsion Laboratory (JPL), and as requested and agreed, JPL contractors for the spacecraft and GRS.
2. The joint activity will include the participation of a Russian Principal Investigator (PI) for HEND in the Project Science Group of the 2001 Mars Odyssey Orbiter project and in the Scientific Team for the GRS. A Scientific Team for HEND, with participation of Russian and U.S. scientists, will also be created by the Russian PI for scientific analysis of HEND data.

ARTICLE VII: DESIGNATION OF REPRESENTATIVES

Designated Points of Contact for the implementation of the activities described herein are contained in the Annex to this Implementing Agreement. Either Party may modify the Annex by written notification to the other Party.

ARTICLE VIII: CUSTOMS AND IMMIGRATION

1. In accordance with the Agreement Between the Governments of the United States of America and the Russian Federation Concerning the Procedure for the Customs Documentation and Duty-Free Entry of Goods Transported Within the Framework of U.S.-Russian Cooperation in the Exploration and Use of Space for Peaceful Purposes of December 16, 1994, the Parties shall identify goods and technical data to be eligible for the duty-free entrance to and exit from their respective countries. No customs, duties, taxes or other charges shall be assessed on such

goods or technical data. In the event that any customs duties or taxes of any kind are nonetheless levied on such equipment and related goods, such customs duties or taxes shall be borne by the Party of the country levying such customs duties or taxes. The Parties' obligation to ensure duty-free entry and exit of equipment and related goods is fully reciprocal.

2. Each Party shall facilitate provision of the appropriate entry and residence documentation for the other Party's representatives who enter, exit, or reside within its State's territory in order to carry out the activities under this Implementing Agreement.

ARTICLE IX: LIABILITY

1. With regard to activities undertaken pursuant to this Implementing Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators or their contractors or subcontractors), or employees of the other's related entities for any injury to, or death of its own employees or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage, or loss arises through negligence or otherwise, except in the case of willful misconduct.

2. The Parties further agree to extend this cross-waiver to its own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party, related entities of the other Party, and employees of the other Party or of its related entities for injury, death, damage, or loss arising from or related to activities undertaken pursuant to this Agreement.

3. This cross-waiver of liability shall not be applicable to:

- A. Claims between a Party and its related entity, or between its own related entities;
- B. Claims made by a natural person, his/her estate, survivors or subrogees for injury or death of such natural person, except where the subrogee is a Party to this agreement or has otherwise agreed to be bound by the promises of this cross-waiver;
- C. Intellectual property claims; or
- D. Claims for damage based upon a failure of the Parties or their related entities to flow down the cross-waiver.

4. Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

5. For avoidance of doubt, this cross-waiver includes a cross-waiver of liability arising from the 1972 Convention on International Liability for Damage Caused by Space Objects, where the person, entity, or property causing the damage is involved in protected space operations and the

person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

ARTICLE X: INVENTION AND PATENT RIGHTS

1. Except for the provisions set forth in Article XII, provisions for the protection and allocation of intellectual property rights created during the course of cooperation under this Implementing Agreement are set forth in the Annex of the 1992 Agreement.
2. Subject to paragraph 1 above, nothing in this Implementing Agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors.

ARTICLE XI: PUBLIC INFORMATION

Each Party may release public information about its own portion of the program as desired, and may, after suitable consultation, release information about the other Party's portion of the program or about the program as a whole. Each Party may freely re-release any publicly distributed information about all portions of the program.

ARTICLE XII: TRANSFER OF GOODS AND TECHNICAL DATA

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Implementing Agreement, in accordance with the following provisions:

1. The transfer of technical data for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by national laws and regulations relating to export control or the control of classified data. If design, manufacturing, and processing data and associated software, which is proprietary but not export controlled, is necessary for interface, integration, or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked. Nothing in this article requires the Parties to transfer goods or technical data contrary to national laws and regulations relating to export control or control of classified data.
2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export control or technical data which is proprietary or subject to export controls, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (e.g. contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Implementing Agreement, and the identified goods and marked technical

data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party. The receiving Party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.

3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Implementing Agreement, shall be used by the receiving Party exclusively for the purposes of the programs implemented by this Implementing Agreement.

ARTICLE XIII: SCIENTIFIC DATA

At such times as the Parties may mutually agree, the results of joint activities of the Parties within the framework of this Implementing Agreement shall be made available to the scientific community through publication in appropriate journals or other established channels. In the event such reports or publications are copyrighted, the Parties shall have a royalty-free right under the copyright to reproduce, distribute, and use such copyrighted work for their own purposes.

ARTICLE XIV: DISPUTE RESOLUTION

1. The Parties shall consult promptly with each other on all issues involving interpretation and implementation of this Implementing Agreement.

2. In the event a dispute arises, such matters shall first be referred to the NASA and IKI Points of Contact identified in the Annex.

3. Any matter that has not been settled in accordance with the above paragraph shall be referred to the NASA Associate Administrator for Space Science and the Rosaviakosmos Deputy General Director, or their designees, for resolution.

ARTICLE XV: DURATION

1. This Implementing Agreement will expire upon completion of all its activities, or on April 30, 2006, whichever comes first. This Implementing Agreement may be amended by a separate written agreement of the Parties.

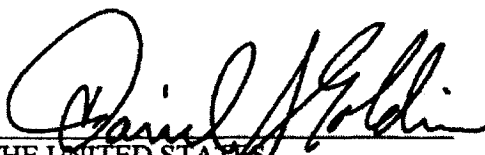
2. Either Party may terminate this Implementing Agreement upon six (6) months' written notice to the other Party.

3. Termination of this Implementing Agreement shall not affect the Parties' continuing obligations under Articles V, VIII, IX, X, XI, and XII unless otherwise agreed by the Parties.

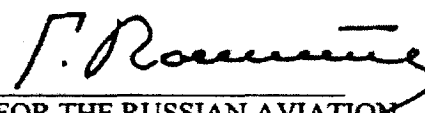
ARTICLE XVI: ENTRY INTO FORCE

This Implementing Agreement shall enter into force upon signature by the Parties.

The undersigned, being duly authorized, have signed this Implementing Agreement, in duplicate, in the English and Russian languages, each text being equally authentic.


FOR THE UNITED STATES
NATIONAL AERONAUTICS AND SPACE
ADMINISTRATION

Date: APR - 6, 2001


FOR THE RUSSIAN AVIATION
AND SPACE AGENCY

Date: APR 6, 2001

ANNEX

POINTS OF CONTACT

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